

The invention relates to solid fuel apparatus, in particular to horizontal or vertical heating apparatus or barbecue-type cooking apparatus and most particularly to ignition process or system for such kind of apparatus.

5 It is known that ignition of a solid fuel apparatus, in particular a heating apparatus or a barbecue-type cooking apparatus, that is to say the combustion beginning of the fuel, is responsible of the major part of accidents due to such apparatus.

10 The invention aims to overcome these problems whilst procuring other advantages. More precisely, it consist to an ignition method for a solid fuel apparatus, in particular a heating apparatus or barbecue-type cooking apparatus, wherein said method comprises a step consisting in blowing hot air on
15 at least one part of said solid fuel which is arranged in a container of said apparatus, in order to ignite the combustion of said at least one fuel part.

The combustion ignition by a hot stream enables to avoid any using of a fire lighting apparatus, for example as
20 matches or by inner or outer flame bringing, and especially enables to avoid any adjunction of various flammable products more or less toxic and dangerous of liquid fuel type. The solid fuel can be, for example paper, small pieces of wood, but also wood coal or any other solid fuel of the market.

25 According to an advantageous characteristic, the method according the invention moreover consists in blowing a hot air on said fuel, after combustion starting of said at least one part of said solid fuel, in order to increase the combustion extension of said fuel or to poke combustion in
30 said container.

So, this characteristic enables the increasing of the combustion starting and extension stage in order to quickly obtain an efficient level of the apparatus and/or to poke the combustion according to the temperature and the desired
35 cooking speed.

According to an advantageous characteristic, the method according to the invention moreover consists in blowing a hot air on said fuel, before combustion starting of said at least

one part of said solid fuel, in order to clear moisture from said fuel.

The invention also relates to a solid fuel apparatus, in particular a heating apparatus or barbecue-type cooking apparatus, for carrying out a method, comprising a container for containing a solid fuel, wherein said apparatus comprising at least means for generating a hot air stream on at least one part of said solid fuel.

According to an advantageous characteristic, said container comprises a furnace grid, an ash pit disposed under said furnace grid, said furnace grid and said ash pit being disposed in the bottom of said container, said means for generating a hot air stream on at least one part of said solid fuel comprising :

- a pipe to conduct said hot air stream to said container, one end of which leads to said grid into said container, or over to said grid,

- a hot air stream generator disposed out of said container and connected to the other end of said pipe.

According to an advantageous characteristic, said pipe to conduct said hot air stream to said container comprises hot air providing means to said ash pit, one end of said pipe leads to said grid into said container, or over said grid and the other end is connected to a hot air stream generator.

Hot air providing means to ash pit enable to diffuse the hot air below the furnace grid and to widely distribute it through the furnace grid into the fuel situated into the container over the furnace grid. Thus, the hot air diffusion points into the fuel can be distributed along a wider area.

According to an advantageous characteristic, the apparatus according to the invention comprises shutting means to obturate said feeding means with hot air to said ash pit, movable between two positions, a first position where said feeding means is open and a second position where said feeding means is closed.

This characteristic enables the user to choose a hot air distribution according to his needs.

According to an advantageous characteristic, the

apparatus according to the invention comprises regulation means for said hot air stream headed through said pipe.

This characteristic enables an user to modify the hot air stream exhausted onto the fuel according to his needs.

5 According to an advantageous characteristic, the apparatus according to the invention comprises means for diffusion of said hot air stream in a horizontal plane and radially into said container.

10 This characteristic enables to distribute and to extend the hot air way into the fuel and thus enable to obtain a better efficiency of the hot air ignition system.

 According to an advantageous characteristic, the pipe comprises one end connected to an air stream generator, several sleeves of different diameters which comprise
15 respectively one or several entries, enabling by rapid-junction means the adaptation of one or several fans equipped with heating resistance.

 This characteristic enables to adapt by a simple sleeve, or by any other known quick connecting system, one or several
20 fans equipped with heating resistance, for example available on the market, as "hair-dryer" or "burner" among others, able to be removed once the ignition operation is ended, or staying connected for activating embers by getting some oxygen, in order to raise the furnace temperature.

25 According to an advantageous characteristic, the pipe is adaptable onto said apparatus by a simple drilling at the bottom of said ash pit wherein said pipe is quickly fitted by way of thread, lug, quarter turn milled ring or by rapid-junction means.

30 This characteristic enables the pipe to be adapted onto existing solid fuel apparatus, in order to provide such present apparatus with an ignition system according to the invention.

 According to an advantageous characteristic, the pipe
35 merges into said ash pit until brushing against said furnace grid of said apparatus.

 According to an advantageous characteristic, the pipe is fitted onto said ash pit by rapid-junction means, enabling a

quick removing of said pipe in order to enable emptying of said ash pit.

According to an advantageous characteristic, the pipe is drilled by oblique holes along its upper surround, in order to diffuse the most widely, by way of a hot air stream division caused by a truncated washer arranged inside said pipe, assuring the division of said hot stream for one side towards said ash pit and for the other side towards said container in which the furnace of said apparatus is set.

Other characteristics will appear more clearly by reading the two following examples of embodiments of a barbecue-type cooking apparatus according to the invention, with reference to the appended drawings, examples given as illustration without any limitation:

- Figure 1 shows in section view a first embodiment of a barbecue-type cooking apparatus according to the invention,

- Figure 2 shows in partial section view a second embodiment of a barbecue-type cooking apparatus according to the invention, and,

- Figure 3 shows an enlarger detail of figure 1.

The apparatus represented on figures 1 and 2 comprises :

- a container 6 surrounded by a frame 7 comprising a cooking grid 8 of which the fixation level onto the frame 7 is advantageously adjustable in relation with the container bottom,

- a furnace grid 9, disposed at the bottom of the container,

- an ash pit 10 disposed under the furnace grid,

- a pipe 1 to head the hot air stream into the container, of which one end leads to the furnace grid into the container, or over it,

- a hot air stream generator 3, 4, 5 disposed out of the container 6 and connected to the other end of the pipe 1, able to provide heated air, preferably to a temperature around 500°C, for example by way of electrically resistors,

- legs 11 to support the container 6.

The hot air stream, channeled into the pipe 1 with shape and section adapted to the ash pit 10, is advantageously

regulated by the rotation of a throttle 2 which, handed positioned, modifies the flow at will. The exhausted air is for example furnished by a hand held 4 or electrical 5 fan, mono or multi gears, provided with one or several electrical resistors at its outing, preferably controlled by switch, remote control or any other equivalent control apparatus, advantageously enabling to quickly clear moisture from the fuel before combustion starting which may advantageously be automatic, and then to poke embers combustion if needed, according to the temperature and the desired cooking speed.

The pipe 1 is advantageously provided with a set of sleeves 12 of different diameters, with one or several entries, enabling by sleeve, or by any other known quick connecting system, one or several fans equipped with heating resistance, for example available on the market, as "hair-dryer" or "burner" among others, able to be removed once the ignition operation began, or let connected for activating embers by getting some oxygen, in order to raise the furnace temperature.

The pipe 1, provided or not with a flow regulating throttle 2, is adaptable onto most of present barbecues by a simple drilling at the bottom of the ash pit wherein it is quickly fitted by way of thread, lug, quarter turn milled ring or by rapid-junction means. The pipe 1 merges for example into the ash pit until brushing against the furnace grid 9, as shown on figures 1 and 2, in order to avoid the ash dispersal by the exhaust stream and is easily removed to be emptied. The pipe 1 is advantageously drilled by oblique holes 14 along its upper surround, in order to diffuse, by way of a hot air stream division caused by a truncated washer 13 disposed across the pipe 1, the most widely possible, the air coming into the furnace.

According the example shown on the figure 3, the pipe 1 merges directly into the container, over the furnace grid, the other pipe end being connected to the hot air stream generator 3, 4, 5 thus feeding the ash pit with hot air. The pipe merging into the container 6 is advantageously realized by a mobile diffuser 15 moreover enabling to close or to open

the hot air feeding of the ash pit 10, depending on the position chosen by the user, for example by a simple rotation of the diffuser 15. The diffuser 15 may be realized as a cap, turning fitted onto the end of the pipe 1, drilled by holes appropriated to diffuse hot air, hooding the end of the pipe 1, the diffuser holes 15 being disposed in order to advantageously enabling the diffusion of the hot air stream in a horizontal plane and radially into the container 6 and moreover advantageously into the pit ash 10 when said holes of the diffuser 15 are in regard with the hole 14 drilled into the pipe 1, as represented on figure 3.

The removable diffuser 15 merging into the furnace is obturated on its upper part 16 flat or convex, in order to diffuse the whole part of the hot air stream in a horizontal plane into the container and, depending the user needs, into the upper part of the pit ash.

The pipe 1 is advantageously fitted onto the ash pit 10 by any rapid-junction means known, for example a sleeve or a quick attach, enabling a quick removing of the pipe in order to enable the emptying of the ash pit.

The invention enables to ignite a barbecue without matches or light, in less than one minute with an exhausted air at a temperature around 500°C, and the cooking can begin three minutes after ignition. There is no problem with the ignition of a moist fuel, the moisture being cleared in few seconds by the hot air exhausted. The cooking can be increased by feeding the container with hot air while this one, or by a classic way by stopping the hot air feeding. When the apparatus does not comprise a pit ash, the hot air exhaust can be situated directly into the container. The hot air can alternatively with the previous description be provided by a gas burner and be exhausted by a hand held fan.

The hot air ignition system is also applicable to inserts, wood or coal burning stoves, chimney or any other heating or cooking means using solid fuel wood, coal or waste oil based.